

**California Energy Commission PIER Advisory Board**  
**Advisory Board Meeting Summary**  
**November 10, 2010**  
**9:30-5:00 pm**

**Action Items and Board Member Comments**

**Top 10 action items and/or comments**

1. Streamline contracting and program administration and make the process more responsive, speedy, and flexible.
2. Better communicate research results to the Governor, the Legislature, and the research community.
3. Publicize the “success stories” and engage stakeholders to share successes.
4. Increase the transparency of decision-making processes.
5. Develop clear PIER program plans and update at least every two years.
6. Connect the PIER program goals to clean energy, job creation, workforce development, and a green economy.
7. Demonstrate an integrated research agenda with the California Public Utilities Commission (CPUC), California ISO (CAISO), and the California Air Resources Board (CARB).
8. Enhance decision support tools. For example, help local governments achieve SB 375 regional GHG reduction targets.
9. Articulate an overarching vision for PIER. As a suggestion, vision should describe how California will look in 25-30 years, and how the PIER program will contribute to this vision.
10. Think BIG! Need a big, bold idea or vision around which to organize the PIER program.

**Additional action items and/or comments**

11. Prepare an annual research plan. Solicit input from CPUC, CAISO, CARB, and others.
12. For PIER reauthorization, the Legislature will be looking for evidence of tangible ratepayer benefits.
13. Benefits of PIER can be expressed in both quantitative and qualitative terms. Benefits need to be well documented to ensure they are defensible.
14. Royalties are not critical, and if they present a barrier to future contractors, or a burden to the CEC, then the royalty terms and conditions should be removed from future contracts.

## Meeting Summary

Commissioner Byron called the meeting to order shortly after 9:30 AM with welcoming remarks. Laurie ten Hope covered logistics. Commissioner Byron invited the Board members and guests to introduce themselves. The following attendees, sitting at the Board table, provided introductions (list of Board members attached):

Commissioner Byron, California Energy Commission (CEC)

Commissioner Boyd, CEC

Gina Adams, Senior Consultant, State Assembly Utilities and Commerce Committee

Steve Berberich, Vice President and Chief Operating Officer, California ISO (CAISO)

Lee Burrows, Director, Vantage Point

Jonathan Changus, Principal Policy Consultant, Office of Senator Sam Blakeslee

Paul Clanon, Executive Director, California Public Utilities Commission (CPUC)

Kevin Dasso, Senior Director, Smart Grid and Technology Integration, Pacific Gas and Electric Company (PG&E)

Mike DeAngelis, Program Manager, Advanced, Renewable and Distributed Generation Technologies, Sacramento Municipal Utilities District (SMUD)

Felipe Fuentes, Assembly Member, 39<sup>th</sup> District, State of California

Laurie ten Hope, Deputy Director of PIER, CEC

Jim Kelly, Senior Vice President, Transmission and Distribution, Southern California Edison (SCE)

Patricia Monahan, Office Director, Union of Concerned Scientists

Mary Nichols, Chairman, California Air Resources Board (CARB)

Sean Randolph, President and Chief Executive Officer, Bay Area Council Economic Institute

Steve Schiller, Board Chairman, California Energy Efficiency Industry Council

Byron Sher, Former California State Senator

Jim Sweeney, Professor, Management Science and Engineering, Stanford University

Following the introductions, Commissioner Byron moved into a discussion of the purpose of the Board and the PIER Advisory Board Charter. A copy of the Board Charter was included in the Briefing Book that was handed out to all Board members. The Briefing Book was also e-mailed to all Board members prior to the meeting. A question was asked as to whether the Board Charter was new or a revision. Laurie ten Hope answered that the Charter is a new document.

Commissioner Boyd reviewed the agenda and the expected outcome for the meeting. A condensed version of the agenda follows; the complete agenda is in the Briefing Book):

- 9:30 Welcome
- 9:40 Introductions
- 9:50 Advisory Board Purpose
- 10:10 Review Agenda and Expected Outcome
- 10:30 How is the PIER Program Perceived Today?
- 11:15 Setting the Stage for the Next Decade of PIER
- 1:15 PIER Program Focus
- 2:15 Path to Market
- 3:30 Measuring Benefits
- 4:00 Royalties
- 4:15 Public Comments
- 4:45 Closing and Next Steps

As part of the agenda discussion, Commissioner Boyd mentioned the PIER program is guided by the following:

- Legislation
- Executive orders
- Integrated Energy Policy Report (IEPR) – prepared every two years
- Loading order

Commissioner Byron then reviewed the following questions, which were raised during the October 27 Webinar:

1. How does the Commission decide which projects to fund and what criteria are used to select projects?
2. What is the breakdown of PIER funded projects between the public and private sectors? Private vs. public universities? Small vs. large companies?
3. How effectively is PIER money being spent? What results have been achieved?
4. How can the program satisfy multiple policy objectives?

Commissioner Byron went on to invite the Board members to respond to the following questions:

***How is the PIER program perceived today? What is working (or not working)? What is the biggest complaint or concern that you hear?***

Responses from Board members are outlined below:

➤ Steve Schiller

- Are there productive results coming out of PIER?
  - Are the results actionable?
  - Are the results timely?
  - Do the results support California policies?
- What is working well (positive comments)?
  - Public interest research is critical and needs to be continued (or expanded).
  - Mentioned ARPA-E as an opportunity for leveraging funds.
  - Suggested that AB 32 came about because of work that PIER did.
- What is not working (areas for improvement)?
  - Personnel issues
  - Contracting issues
    - ◆ Delays in getting results out. For example, latest document on CEC climate web page is from 2007.
    - ◆ Risk averse. Need to embrace failure as part of RD&D process.
  - Communications

➤ Kevin Dasso

- What is working?
  - Recent transmission workshop was very helpful.
  - Results from PIER projects are generally good.
- What is not working?
  - Need to do a better job of communicating results.
  - He looked at the CEC web site and offered the following comments:
    - ◆ Good reports on web site.
    - ◆ However, many policy makers and stakeholders are probably not aware of these reports or other valuable information on CEC web site.

- Sean Randolph
  - Communications needs to be improved. The PIER programs lack recognition.
  - Californians are generally a receptive audience for supporting leading edge programs.
- Jim Kelly
  - He supports long term continuation of the program
  - Offered four guiding principles:
    - Funding support for PIER should be derived from all energy providers (not just the IOUs).
    - Decision-making process should be more transparent.
    - Program management costs need to be reasonable.
    - Need to push for speed and flexibility in completing projects.
    - To accomplish California's unprecedented policy goals particularly with regards to renewable energy, transmission distribution and communication technologies have to be at the forefront. One comment, our grid today, particularly in California, is very smart but we need one that is even smarter and PIER can help us get there.
- Mike DeAngelis
  - The PIER program is critical and needed.
  - Areas for improvement:
    - Publication of success stories
    - Contracting process needs to be more streamlined / shortened.
    - A programmatic R&D platform could help with streamlining contracting process.
    - Improve multiyear planning process.
    - Need to attract top talent into PIER.
    - Lots of PIER success stories and need to focus on sharing that information.
- Patricia Monahan
  - PIER needs better public relations (PR) with, perhaps, a name change.
  - PIER acronym doesn't necessarily convey intent of program and could be more public -friendly.
  - Need to connect green clean jobs to PIER and get this message communicated to the California Legislature.
  - Reach out to junior colleges. They could help with job training for green jobs.
  - Linking PIER program to jobs is critical.
- Byron Sher
  - Need to communicate benefits to the Legislature and public.
  - Said that it will be a hard sell to get all groups that benefit from PIER to pay (response to comment from Jim Kelly).
  - Concerns about PIER:
    - The PIER program should be expanded to deployment and commercialization to maximize jobs in California. Will resonate with the Legislature
  - Research funding from PIER has a high overhead component.
  - PIER should be expanded to deployment and commercialization efforts.
  - Positive comments about PIER:

- Climate research is good. Early progress in climate change is a direct result of PIER work.
- Jonathan Changus
  - There is an information gap, or communication disconnect with the Legislature. Need to make sure that Legislature understands how PIER work supports legislation and executive orders.
  - Need to express the value or benefits of PIER expenditures.
  - Consider engaging Legislature (maybe staff) to get ideas on how best to communicate with Legislative members. Perhaps present PIER program at workshops or other periodic meetings.
- Mary Nichols
  - Communications need to be improved.
  - Web site needs to be updated.
  - Emphasize need to be nimble and flexible in contracting process to help meet Legislative goals.
  - Need an annual research plan. Should consult with California Air Resources Board (CARB), Public Utilities Commission (PUC), and Independent System Operator (ISO) to prepare this research plan.
- Paul Clanon
  - A government body that thinks too much about PR is going down the wrong path.
  - Main driver should be to do good work. Don't worry too much about communicating to the outside world, but definitely do communicate with the Legislature about the work along the lines of the Loading Order and greenhouse gas emissions (GHG).
  - Biggest complaint:
    - PIER doesn't think big enough. Need to organize work around a couple of big ideas. Ideas could be clearly linked to the Loading Order or AB 32.
- Steve Berberich
  - The PIER program is a good program.
  - Decision-making needs to be more transparent and efficient.
  - What can the program do to support 33% RPS by 2020, or rapid adoption of electric vehicles (EVs)?
- Jim Sweeney
  - Stanford University and other private institutions are reluctant to go directly to PIER for funding because of the contracting hurdles.
  - Not worried about communications from PIER to the public. Communication to the Legislature does have to happen, however.
  - PIER contractors are, in some cases, doing a good job of getting the word out about benefits of PIER work. May not be getting to Legislature.
  - Electric funding has remained constant at \$62.5 million since program started in 1996. In real dollars, the funding has gone down about 30% between 1996 and the present.
- Gina Adams
  - Message about PIER is getting to her Legislative committee.
  - Communications are a challenge. There is a lot of turnover in the Legislature.

- Sean Randolph
  - PIER is presented mostly as a technology program. Perhaps the PIER program should be portrayed as a climate change program.
- Felipe Fuentes
  - Interested in helping to streamline PIER contracting process.
  - Suggested that communications be directed to explaining benefits to end-users.
  - PIER work should be connected to cost effective expenditures of funds. Show how PIER expenditures benefit the State of California.
  - An annual meeting may not be sufficient for conveying results and benefits of PIER.
  - Suggested that CEC not spend a lot of money on communications.

Laurie ten Hope went through slides in Section 4 of Briefing Book that covered “Setting the Stage for the Next Decade of PIER.” Board members were asked to respond to three questions:

***How has your energy business or organization changed since 1996?***

***What changes in energy might be anticipated in the next decade?***

***Is there a need to increase energy R&D investments by public and/or private sector?***

- Lee Burrows
  - Many parts of the world look at California as a leader in clean technology.
  - Commissioner Byron asked about where future venture money may go?
    - Lee said there is a long term interest in clean tech.
    - PIER program provides a bridge to get start-up companies from R&D to commercialization.
- Jim Sweeney
  - What has happened (since 1996)?
    - Shift in balance of supply and demand side priorities. Started out mainly on the supply side.
    - In early years everything was focused on technologies. Emphasis has now shifted to things like behavioral issues and how technology impacts behavior.
- Sean Randolph
  - Large investments are being made in many other parts of the world. For example, Spain, Germany, China, India, Denmark, etc.
  - California is way behind the curve in manufacturing hardware, but is a leader in R&D (innovation).
- Kevin Dasso
  - Greater emphasis on customers today as compared with 1996.
  - What can we anticipate in the next decade:
    - Clash between policy and customers (customers want to know what is in it for them).
    - Need more R&D.
  - Public versus private.

- Public research should focus on high risk research.
- Private research can then focus on lower risk research that has a clearer path to the market.
- Mike DeAngelis
  - Public interest R&D is underfunded.
  - What has changed from 1996?
    - Demand for low carbon electricity. Need energy efficient technologies that support low carbon economy.
    - Focus on renewables (RPS policy).
      - ◆ Variability in supply (intermittent nature of wind and solar).
      - ◆ Need electricity storage to support renewable.
    - Smart grid is new since 1996.
    - Electric Vehicles (EVs) are on the verge of large scale market penetration today, as compared with 1996 (e.g., what will the demand be when EVs are plugged in at homes?).
- Mary Nichols
  - What has changed since 1996?
    - Regulation of GHGs is now part of CARB's mission.
  - What will happen in the future?
    - The electric utilities will be in the transportation business (EVs).
  - Is there a need for energy R&D?
    - Yes
  - Mentioned that the CARB has money to support companies trying to get through the Valley of Death.
    - Proposals have been somewhat disappointing.
    - Maybe there is a better way for CARB to spend this funding.
- Steven Schiller
  - Two changes since 1996
    1. Perception in 1996 that deregulation will decrease energy costs (didn't turn out that way).
    2. We now have an energy efficiency (EE) industry (employment, manufacturing, etc).
- Jim Kelly
  - Supports the concept of having PIER pursue big ideas.
  - Widgets are not as important as communications. PIER should be looking at communications.
  - Two important developments have occurred in recent years:
    1. Ubiquitous communications
    2. Cost effective, high power computing
- Paul Clanon
  - How has the PUC changed since 1996?
    - ◆ PUC now runs programs (e.g., the California Solar Initiative)
  - What changes in energy might be anticipated in the next decade?
    - Green jobs and clean tech will be drivers for change.



Laurie ten Hope initiated a discussion of the PIER program focus, and went through the slides in Section 5 of the Briefing Book. Questions and comments that came out of this discussion included the following:

- AB 118 doesn't apply directly to PIER. Perhaps it should be removed or explained better on the pie chart (Slide 5-4).
- Transportation expenditures, to date, are relatively low because this program is relatively new.
- Renewable expenditures connected to AB 1098 are not reflected in the charts.
- Additional input was provided on what is included in the natural gas transportation program.
- There are restrictions on how PIER natural gas funds and PIER electricity funds can be spent (e.g., can't necessarily shift natural gas transportation funds to EVs).
- Additional input was provided on strategic planning. Strategic plans for entire program (both electricity and natural gas) were last done about 5 years ago. Strategic plans are done on routine basis for each program.

The Board members were asked to comment on the following three questions:

***Seeking feedback on allocation of funding and focus of research. Are the allocation and focus correct?***

***Does PIER have the proper balance between allocating funding for state priority energy issues versus maximizing the use of match funds?***

***Can PIER increase the synergies with the public and private sector energy programs?***

- Steve Schiller
  - PIER should develop information to help decision makers with strategic issues.
- Commissioner Byron
  - Mentioned the transportation center at UC Davis (ITS – Institute of Transportation Studies), which is a focal point for CEC transportation funding.
- Steve Schiller
  - What does zero energy buildings goal mean for the utilities? Perhaps PIER should be looking at business models for utilities.
- Mary Nichols
  - Started with a question. The AB 375 requires regional plans within California for reducing GHGs from transportation sector. CEC has looked at land use implications. Regions are telling CARB that looking at land use impacts is difficult. Is there a place in PIER where this work can be done?
  - Would like to see more work in transportation. Particularly, land use modeling.
- Commissioner Byron
  - CEC is working on these issues:
    - Technologies (e.g., vehicles)
    - Fuels
    - Land use

- Sean Randolph
  - Echoed that it is a challenge for local governments to comply with AB 375.
  - Governments have cut back on planning staff, and planning for AB 375 (and other policies) has become more difficult.
  - Asked about what goes into climate and environment (not part of “Loading Order” Slide 5-5)?
    - Answer (Ken Koyama)
      - ◆ Terrestrial resources (impacts of large solar farms)
      - ◆ Aquatic (hydroelectric power, etc.)
      - ◆ Air quality (indoor air quality decline with tighter buildings)
      - ◆ Climate change (adaptation studies)
- Steve Berberich
  - What should the focus be?
    - Maybe focus on AB 32.
    - Implications of 33% on electric power generation and gas deliveries.
    - Energy storage.
    - Forecasting (load and demand).
    - Integration of EVs (could increase electricity use).
- Patricia Monahan
  - Where are the transmission infrastructure investments going?
  - What are the natural gas transportation gaps?
- Commissioner Byron and Boyd
  - Indicated that the electric and natural gas funds come from different programs. For example, can’t shift NG transportation funds to EV research.
- Ken Koyama talked about natural gas transportation programs.
- Jim Sweeney
  - What should the focus be?
    - Does all of the work need to benefit ratepayers? For example, is PIER constrained to only looking at adaptation issues that benefit rate payers?
    - PIER is a small player compared to the U.S. Department of Energy (DOE). Should PIER be driven by leveraging DOE funds?
    - Perhaps there should be a focus on grid reliability?
    - Basic point is that the starting point should be a fundamental understanding of strategic vision. He said that handouts do not address this item. He is frustrated by not knowing what the fundamental strategic vision is for PIER.
- Commissioner Boyd
  - PIER vision driven by:
    - Legislation
    - Loading order
- Commissioner Byron
  - PIER is constrained by what legislature wants.
  - PIER always looks to leverage funding. For example, ARRA funds.
  - IEPR contains the PIER vision.
- Mike Gravely
  - PIER put up ~\$20 million
  - Brought in ~\$1.4 billion

- \$500 million of ARRA
- \$900 million of other investment
- Commissioner Boyd
  - PIER program was put into place with a clear emphasis on providing ratepayer benefits. Ratepayer benefits are a clear constraint for PIER program.
- Paul Clanon
  - Commented on natural gas funding
  - Said he was concerned with the meaning of Slide 5-5
    - For example, what is PIER's role in energy efficiency (EE)?
    - How has PIER program benefitted these areas (Slide 5-5)?
  - San Bruno natural gas (NG) incident has taken up a lot of his time.
    - There are gaps in how regulators think about safety and an aging infrastructure.
    - Is there a role for PIER?
- Mike DeAngelis
  - What is the future of California 20-25 years in the future? How can PIER program contribute to this vision?
  - Don't do research to get match funds. Conduct research to meet needs.
- Jackie Kinney
  - Senator Padilla has held one PIER oversight hearing and plans another in January 2011. The legislature wants to see tangible ratepayer benefits to re-authorize program.

Laurie talked about "Path to Market" slides in Briefing Book (Section 6 of the binder). The Board members were asked for feedback on the questions below, and the following input was provided:

***R&D developments can languish in the "valley of death." Is there more PIER, or its partners, can do to address this?***

***Is there an opportunity for non-PIER funding sources to assist bringing successful projects to market?***

***Discuss the role of PIER, and the State, in encouraging investment from the venture capital community.***

- Lee Burrows
  - Suggested that it would be easier to answer questions if there is some type of high level vision statement.
  - Mentioned Adura Technologies
    - Got PIER funding
    - Then got Vantage Point VC funding
- Mary Nichols
  - Said CARB has planning process
  - Supported the idea of developing research plans
- Commissioner Byron
  - Commented on a two day process to review and approve research plans

- Need to think about how the R&D planning process is done
- Commissioner Boyd
  - Have talked about the need for a Strategic Plan. A need exists to move this forward.
- Sean Randolph
  - How about getting the end users in touch with the innovators at an early stage to help guide product development?
- Jim Kelly
  - Southern California Edison (SCE) is not driven by legislation and loading order. They are driven by system reliability and safety.
- Jim Sweeney
  - Innovators have ideas about creating technologies and creating companies.
  - Can PIER do something to more fully empower or encourage contractors to succeed?
- Laurie ten Hope and Mike Gravely talked about Energy Innovation Small Grants (EISG) program
  - Up to \$95k
  - Awarded over 300 grants in the program
  - ~45% of recipients receive follow-on funding
  - \$1.5 billion of follow-on funding received by EISG recipients
  - EISG run by University of California at San Diego
  - 85% of funds spent in state
- Mike DeAngelis
  - No easy answers on moving technologies through Valley of Death.
  - There may be better ways to leverage State programs to help technology developers.
  - Recommended that PIER look at existing technologies and programs to get through Valley of Death.

Laurie talked about “Measuring Benefits” slides in Section 7 of the binder. The Board members provided the following feedback:

- Jim Sweeney
  - Mentioned US DOE documents on measuring benefits, which are available at [www.nap.edu](http://www.nap.edu).
  - DOE wanted to talk about benefits of programs where DOE had a very small piece. DOE was criticized for over exaggerating their contributions.
    - Commented on Slide 7-10. Suggested that CO2 could be expressed in a range of savings (e.g., \$50/ton --- carbon benefits). This would help to compare environmental and energy benefits.
  - Results of DOE analysis
    - 3 primary types of benefits
      - ◆ Economic
      - ◆ Environmental
      - ◆ Security

- Matrix with a combination of quantitative and qualitative benefits could work.
- What would happen if DOE did not fund work?
- Jim Kelly
  - Said that if the Legislature judges PIER on economic returns, then PIER program will not be re-authorized
- Kevin Dasso
  - Said that Slides 7-10 need to be clearly described.
  - Not everything can be reduced to dollars (e.g., value of reliability)
  - Need to think about who benefits
    - Societal
    - Ratepayer
- Mike DeAngelis
  - Need to quantify the benefits (not easy)
  - Also important to properly tell the story
- Paul Clanon
  - Impossible to measure benefits of something like energy efficiency (EE).
    - Need to estimate behavior before and after EE measure was implemented.
- Mary Nichols
  - CARB has not been required to come up with numbers to justify research programs.
- Byron Sher
  - Reiterated that legislature will be looking at ratepayer benefits to re-authorize PIER.
  - Benefits do not necessarily need to be reduced to dollars, but do need to be clearly expressed. Suggested using case studies of specific projects.
  - Senator Padilla may be able to get bill moved from Senate to Assembly, but there will be a battle in the Assembly.
- Steve Schiller
  - Theory is that metrics follow from a vision. In reality, there is an iterative process.
  - Cost effectiveness
    - Research is more than just cost effectiveness
- Sean Randolph
  - There are broader economic benefits from PIER.
  - Suggested that Legislature will be skeptical of benefits that PIER claims.
  - PIER will need to have well supported backup for benefits
  - Perhaps adoption rates of technologies might be a good measure of benefits

Laurie ten Hope talked about royalties and asked for feedback from the Board members.

- Paul Clanon
  - Where does the royalty money go?
  - Royalties are probably not worth much time.
  - Would favor removing royalties.

- Mary Nichols
  - CARB does not require royalties.
- Paul DeAngelis
  - Cons exceed pros of royalties.
  - Royalties are barrier. Can they be simplified? Perhaps the early re-payment option can be simplified.
- Jim Sweeney
  - Agrees with others. Get rid of the royalties.
  - Royalties are a burden. However, optics of getting royalties is positive.
- Sean Randolph
  - Drop royalties.

Commissioner Byron invited public comments. No comments were received and he moved on to closing remarks. The next meeting is tentatively set for March 22, 2011, however, other dates (March 16, April 13, March 30 in order of preference) may be proposed. Jim Kelly offered to have Southern California Edison host the next meeting at their facility. Commissioner Byron expressed his appreciation and said he would take that under advisement. Potential topics for the next meeting include:

- Project priorities for budget year 2011-2012
- Programmatic focus for next decade
- Action items from today

Laurie ten Hope asked Board members if they would be willing to give a two year commitment to serve on Board. No objections were raised, although Steve Schiller expressed some reservations based on how CEC decides to engage with the Advisory Board in the future. The Board members were asked about the type of engagement they would like to see in the future, and the following input was provided:

- Sean Randolph suggested that it would be helpful to see a pipeline of PIER projects.
- Kevin Dasso suggested that Advisory Board could be a sounding board for communicating benefits to the Legislature.
- Mary Nichols said she would volunteer to help reduce PIER planning documents to a form suitable for engaging the Advisory Board.
- Jim Sweeney said that PIER meeting dates should be based on getting maximum number of Board members to participate.

A summary of the top 10 action items from the meeting was presented (these are repeated from the beginning of this document):

1. Streamline contracting and program administration and make the process more responsive, speedy, and flexible.
2. Better communicate research results to the Governor, the Legislature, and the research community.

3. Publicize the “success stories” and engage stakeholders to share successes.
4. Increase the transparency of decision-making processes.
5. Develop clear PIER program plans and update at least every two years.
6. Connect the PIER program goals to clean energy, job creation, workforce development, and a green economy.
7. Demonstrate an integrated research agenda with CPUC, ISO, and ARB.
8. Enhance decision support tools. For example, help local governments achieve SB 375 regional GHG reduction targets.
9. Articulate an overarching vision for PIER. As a suggestion, vision should describe how California will look in 25-30 years, and how the PIER program will contribute to this vision.
10. Think BIG! Need a big, bold idea or vision around which to organize the PIER program.

Before closing, Commissioner Byron invited the Board members to provide any concluding comments.

- Lee Burrows: Doesn’t want to lose PIER.
- Mike DeAngelis: Liked the structure for this PIER Advisory Board meeting, which had a lot of engagement with Board members.
- Jim Kelly: CEC needs to think about how Board members can help ensure that PIER program gets re-authorized.
- Kevin Dasso: Wants to think about how PG&E can leverage PIER program. Also wants to think about how PG&E can help PIER get re-authorized.
- Jim Boyd: Need to communicate ratepayer benefits to the Legislature to get the PIER program re-authorized.

Commissioner Byron adjourned the PIER Advisory Board meeting at approximately 4:50 PM.

## PIER Advisory Board Membership

<b>Three members of the Senate, appointed by the Senate President Pro Tempore</b>
Senator Alex Padilla, 20 <sup>th</sup> State Senate District, Chair, Senate Energy, Utilities and Communications Committee
Senator Alan Lowenthal, 27 <sup>th</sup> State Senate District, Member, Energy, Utilities and Communications Committee
Senator Joe Simitian, 11 <sup>th</sup> State Senate District, Chair, Environmental Quality Committee and Member, Energy, Utilities and Communications Committee
<b>Three members from Assembly, appointed by the Speaker of the Assembly*</b>
Felipe Fuentes, Assembly Member, 39 <sup>th</sup> District
Two positions are open and are pending Speaker's approval*
<b>Other Board Members</b>
Steve Berberich, CAISO, VP and Chief Operating Officer
John Boesel, CALSTART, President and Chief Executive Officer
Paul Clanon, California Public Utilities Commission (CPUC), Executive Director
Kevin Dasso, Pacific Gas & Electric Company (PG&E), Senior Director, Smart Grid and Technology Integration
Mike DeAngelis, Sacramento Municipal Utilities District (SMUD), Program Manager, Advanced, Renewable, & Distributed Generation Technologies
Stephan Dolezalek, Vantage Point Venture Partners, Managing Director and Group Leader
David Geier, San Diego Gas & Electric, Senior Vice President, Electric Operations
Jim Kelly, Southern California Edison (SCE), Senior Vice President/Transmission and Distribution Business Unit
Peter Miller, Natural Resources Defense Council, Inc. (NRDC), Senior Scientist
Patricia Monahan, Union of Concerned Scientists, California Office Director
Mary Nichols, California Air Resources Board (CARB), Chairman
Sean Randolph, President & CEO, Bay Area Council Economic Institute
Jananne Sharpless, Former California Air Resources Board (CARB) Chairman and CEC Commissioner
Byron Sher (Invited), Former California State Senator
Steven Schiller, California Energy Efficiency Industry Council, Board Chairman
Jim Sweeney, Stanford University, Professor of Management Science and Engineering